



March 9, 2006

Dear Senator Cowger and Representative Koffman:

I have attached to this letter a response to the various questions and requests for information posed to GenPower at the Public Hearing on the Amendment to LD 141 held on March 7, 2006. Please contact me if you have any further questions.

Very truly yours,

A handwritten signature in black ink, appearing to be 'T. Emero', written over a horizontal line.

Thomas Emero

**GENPOWER LLC**

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**GenPower Response to Questions Raised at Public  
Hearing on Amendment on LD 141 of March 6, 2006**

Several questions were raised at the Public Hearing on Amendment LD 141 of March 7, 2006. The questions directed to GenPower regarding the project to be located in Athens, Maine are listed below with brief responses.

**Question 1:** How many trucks per day will haul fuel to the GenPower-Athens ("GPA") plant if GPA burns 100% C&D derived wood fuel?

**Response 1:**

- 319,000 tons per year
- 20 tons per truck = 15,950 tons per year
- The plant would take deliveries 5.5 days per week and 50 weeks per year for a total of 275 receiving days. This amounts to 58 trucks per weekday, 29 trucks on Saturday and zero trucks on Sunday.

**Question 2:** How many trucks per day will haul WTC Fuel to the GPA plant if the plant burns 100% whole tree chips?

**Response 2:**

- 467,000 tons per year
- 30 tons per truck = 15,567 trucks per year
- The plant would take deliveries 5.5 days per week and 50 weeks per year for a total of 275 receiving days. This amounts to 58 trucks per weekday, 29 trucks on Saturday, and zero trucks on Sunday.

**Question 3:** How much ash will be generated if GPA burns 100% C&D derived wood fuel?

**Response 3:** If GPA burns 100% C&D derived wood fuel, 10% ash by weight will be produced amounting to 31,914 tons per year.

**Question 4:** How much ash will be generated if GPA burns 100% whole tree chips?

**Response 4:** If GPA burns 100% WTC, 4% ash by weight will be produced amounting to 18,680 tons per year, ~~to transport the ash.~~

**Question 5:** Is there a need for the power that will be generated by the GPA plant?

**Response 5:** Yes. ISO-NE estimates that without new power plants there will be brownouts starting in 2008.

**Question 6:** Where will the power produced at the GPA plant be sold?

**Response 6:** Power from GPA will be sold into the ISO-NE grid as required by Massachusetts Renewable Energy Certificates.

**Question 7:** How will the GPA facility affect the regional impact on truck traffic?

**Response 7:** GPA will have one additional truck per hour compared to the Gorbell facility, which operated at the site starting in the mid 1980s. GPA doesn't know the current traffic on regional roads due to the lumber and other industries, therefore the impact of one additional trip per hour cannot be estimated at this time.

**Question 8:** How often will the GPA facility test ash?

**Response 8:** Ash testing will be dictated by the revised Solid Waste rules. GPA will be in full compliance with the rules. The rules are currently under review and therefore GPA does not know the exact schedule that will be imposed.

**Question 9:** How often will the air emissions be tested and for what constituents will air emissions testing be conducted?

**Response 9:** The specific testing requirements will be determined by DEP through the licensing process. At this time the anticipated stack testing requirements are expected to be two times per year for the first two years of operation with the schedule after that to be determined based on an evaluation of previous results and operations (annually for particulate).

Constituents for which testing will be conducted include particulate matter, carbon monoxide, oxides of nitrogen, mercury, dioxin, hydrogen chloride (HCl), acrolein, antimony, arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, selenium, and vanadium.

**Question 10:** How do RECs work? What fuels qualify and what plants qualify?

**Response 10:** Massachusetts RECs are additional payments made to new renewable energy facilities based on the MW-hours the facility produces. There is one REC for each MWh. Every load serving entity in MA has to provide its end users with a specified quantity of new renewable energy each year. The percentage required increases from 2.5% in 2006 to 4.0% in 2009. If a load serving entity does not procure the required RECs then it must make an alternate compliance payment for each REC not obtained. The current price for each unit of alternate compliance payment is about \$53 and it escalates at CPI each year.

The qualifying fuels follow:

- Eligible New Renewable Fuel. An Eligible Biomass Fuel, landfill or anaerobic digester methane gas, hydrogen derived from such fuels or hydrogen derived using the electrical output of a Renewable Generation Unit, but not hydrogen derived from ineligible fuels.
- Eligible Biomass Fuel. Fuel sources including brush, stumps, lumber ends and trimmings, wood pallets, bark, wood chips, shavings, slash and other clean wood that are not mixed with other solid wastes; agricultural waste, food material and vegetative material as those terms are defined, or may subsequently be defined, by the Department of Environmental Protection at 310 CMR 16.02; energy crops; biogas; organic refuse-derived fuel that is collected and managed separately from municipal solid waste; or neat biodiesel and other neat liquid fuels that are derived from such fuel sources.
- Pursuant to Renewable Energy Advisory Ruling for Pine State Power's Proposed Barnstead Power and Light Biomass Generation Unit, C&D wood debris qualifies as "organic refuse-derived fuel that is collected and managed separately from municipal solid waste." (See Attachment 1).

**Question 11:** Comparison of emissions from Wyman Station and other larger and different types of power plants in ME.

**Response 11:** See Table 1, attached.

**Question 12:** How often do plants experience upset conditions? What would GPA have in place to minimize upset situations?

**Response 12:** It is impossible to estimate how many times a plant would have a problem in a given year or on average. There are several broad types of problems that occur: being tripped off-line by ISO-NE due to grid problems, fuel handling problems, and other mechanical failures related to the rest of the plant's equipment.

Regarding air quality, only the second two present any potential problem. Fuel handling problems will not affect air quality or the pollution control equipment except when the fuel causes inefficient combustion. The risk in that case is increased carbon monoxide levels, which will be instantly detected by the continuous monitoring system. GPA has the ability to use its oil fired auxiliary startup burners to restore proper combustion conditions until the fuel issue is resolved.

Other mechanical failures that are of concern to air quality would occur primarily in the baghouse where there are infrequent rips in the filter material or even less frequent fires. Each of the two power trains has a

baghouse, consisting of 3 cells. The system is designed to function at specification even if one of the cells is off-line. If there is a rip or fire in one of the cells a bag leak detection system will automatically route the exhaust gases flowing to that cell to the other two properly functioning cells, insuring that the particulate matter that contains the metals in the exhaust continues to be properly filtered.

Table 1

**Total Allowable Emissions****GenPower Athens (Proposed) ~42 MW**

2 Biomass Fired Boilers	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Tons Per Year (Facility Wide)*	26.5	26.5	52.8	203.4	211.8	13.2
Unit #1 (300 MMBtu/hr)						
lb/MMBtu	0.01	0.01	0.02	0.075	0.08	0.005
Lb/hr	3.0	3.0	6.0	22.5	24.0	1.5
Unit #2 (300 MMBtu/hr)						
lb/MMBtu	0.01	0.01	0.02	0.075	0.08	0.005
Lb/hr	3.0	3.0	6.0	22.5	24.0	1.5

\*Facility wide estimate reflects both boilers operating at 100% for 8,760 hours/yr and includes potential emissions from ancillary equipment (diesel fire pump and emergency generator).

**FPL Wyman Station (Current License #A-388-70-A-I) ~620 MW**

5 Oil Fired Boilers	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Tons Per Year (Facility Wide)*	4,964.8	4,964.8	45,901.6	12,430.2	143,276.2	3,859.8
Unit #1 (630 MMBtu/hr)						
lb/MMBtu	0.2	0.2	--	0.22	--	--
Lb/hr	126.0	126.0	1,360.8	283.5	315.0	63.0
Unit #2 (630 MMBtu/hr)						
lb/MMBtu	0.2	0.2	--	0.22	--	--
Lb/hr	126.0	126.0	1,360.8	283.5	315.0	63.0
Unit #3 (1,190 MMBtu/hr)						
lb/MMBtu	0.2	0.2	--	0.15	--	--
Lb/hr	238.0	238.0	2,570.4	357.3	595.0	119.0
Unit #4 (6,290 MMBtu/hr)						
lb/MMBtu	0.1	0.1	0.8	0.15	--	--
Lb/hr	629.0	629.0	5,032.0	1,887.0	31,450.0	629.0

Unit #5 (72 MMBtu/hr)							
lb/MMBtu	0.2	0.2	--	0.35	--		--
Lb/hr	14.4	14.4	155.5	25.2	36.0		7.2

-- Current license does not contain emission limit on lb/MMBtu basis.

Units 1,2,3,4 NOx limit (lb/MMBtu) are on a 90 day rolling average

Fuel: Units 1,2,3,5 - #6 oil; Unit 4 - #2 oil or #6 oil.

\*Facility wide estimate reflects potential emissions from ancillary equipment (diesel emergency generator).

### Westbrook Energy Center LLC (Current License #A-743-A-I) ~528 MW

2 Combustion Turbines	PM	PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC
Tons Per Year (Facility Wide)	205.7	205.7	87.73	157.3	437.9	25.6
Turbine #1 (1,762 MMBtu/hr)						
ppmdv (corrected to 15% O <sub>2</sub> )	--	--	--	2.5	15	--
lb/MMBtu*	0.012	0.012	0.007	0.01	0.03	0.002
lb/hr	22.0	22.0	12.0	18.0	53.0	3.0
Turbine #2 (1,762 MMBtu/hr)						
ppmdv (corrected to 15% O <sub>2</sub> )	--	--	--	2.5	15	--
lb/MMBtu*	0.012	0.012	0.007	0.01	0.03	0.002
lb/hr	22.0	22.0	12.0	18.0	53.0	3.0

--Current license does not contain emission limit on ppmdv or lb/MMBtu basis.

\*lb/MMBtu is not a limit, pro-rate value derived from lb/hr limit and heat input of turbine.

Fuel: Natural Gas

\*\*Facility wide estimate includes potential emissions from ancillary equipment (diesel fire pump, diesel emergency generator, auxiliary boiler, and cooling tower).

## **ATTACHMENT 1**



**Commonwealth of Massachusetts  
Office of Consumer Affairs & Business Regulation  
Division of Energy Resources**

**RENEWABLE ENERGY PORTFOLIO STANDARD  
ADVISORY RULING**

**FOR  
PINE STATE POWER'S PROPOSED  
BARNSTEAD POWER AND LIGHT BIOMASS GENERATION UNIT**

**December 30, 2004**

**1. Advisory Ruling Request by Pine State Power LLC**

Pine State Power, LLC (hereafter, Pine State) has requested that the Massachusetts Division of Energy Resources (DOER) provide an Advisory Ruling<sup>1</sup> with regard to the qualification as a New Renewable Generation Unit under the Massachusetts Renewable Energy Portfolio Standard (RPS) of a project to retool and add power generation at an old biomass-fired steam boiler facility in Center Barnstead, New Hampshire.<sup>2</sup> Pine State has renamed the facility Barnstead Power & Light (BP&L). This document is DOER's response to that request.

**2. Description of Existing Conditions and the Proposed Project**

The project site is the former Timco sawmill, which had operated a grid-connected cogeneration plant, fueled by its own woody debris, to provide both heat to its sawmill operations and power to Public Service of New Hampshire (PSNH). The original pair of boilers in the plant utilized conventional stoker combustion. The immediately relevant history of the facility is as follows, quoting from the 9/17/04 letter:

In 1994, Timco reached an agreement with PSNH whereby the value of the [power purchase] contract was "bought out" in exchange for Timco's agreement to cease generating power. [It subsequently] ceased to operate one of the boilers, and converted the other to a Wellons vertical, "close-coupled" gasification technology similar to the unit installed at Ware [C]o-gen, . . . Thereafter, the Wellons unit generated steam only (no electricity); the second, stoker boiler, never operated after 1994.

Because neither boiler at this site generated electricity since 1994, DOER regards neither the existing facility as a Vintage Generation Unit (as defined at 14.02) nor the site as a site of Vintage Generation (as defined at 14.05(1)(d)3). Thus, DOER views this as a new facility, even though, from a technical point of view, it is a project of retooling a long-dormant unit and adding or reconnecting generation equipment to both units. The issue before DOER is whether the proposed project, if completed, is likely to be granted a Statement of Qualification as a "New

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<sup>1</sup> The RPS regulations, at 225 CMR 14.06(5), provide an opportunity for a Generation Unit owner or developer "to request an advisory ruling from the Division to determine whether a Unit would qualify as a New Renewable Generation Unit." Hereafter, all references to the RPS regulations will be to sections of 225 CMR 14.00 et seq. More information about Advisory Rulings for MA RPS is at <http://www.mass.gov/doer/rps/advisory.htm>.

<sup>2</sup> The request was made in a letter from Robert Cleaves of Pine State dated September 17, 2004 (hereafter, the 9/17/04 letter). Pine State's consultant, Alex Driessen of Calnex Environmental, Inc., sent additional technical information as attachments to an email message addressed to DOER on October 29, 2004.

Renewable Generation Unit" for RPS. DOER would take that action if it finds that the unit meets the "low-emission, advanced biomass power conversion technology" and uses an Eligible Biomass Fuel, per the regulations at 14.05(1)(a)6. This Advisory Ruling addresses the proposed project's fuels, technologies, and air emissions.

### **3. Discussion of the Projects' Proposed Biomass Fuels**

Pine State plans to fuel the unit with "woody materials extracted from C&D waste processing operations, as supplemented by wood pallets and woody residues from forestry operations."<sup>3</sup> DOER considers these fuels to fall within the definition of Eligible Biomass Fuel in the RPS regulations at 14.02.

DOER's position with regard to C&D woody debris was stated in its "Summary of Public Comments and Agency Responses" dated February 6, 2002, and in a letter from the Massachusetts Department of Environmental Protection (MA DEP) to DOER dated January 8, 2002.<sup>4</sup> As stated in that letter, C&D wood debris, which might include some "wood containing paints, stains, coatings or preservatives . . . can properly be considered as an eligible biomass fuel . . . as one type of 'organic refuse-derived fuel that is collected and managed separately from municipal solid waste.'" DOER has previously stated that C&D woody debris is eligible in Advisory Rulings for EcoPower, Boralex, and GenPower.<sup>5</sup>

### **4. Discussion of the Projects' Proposed Biomass Technology**

The RPS regulations at 14.05(1)(a)6 provide that the qualification of biomass generation units is limited to "low emission, advanced biomass power conversion technologies using an Eligible Biomass Fuel." These criteria are designed to insure that the RPS provides incentives for older, dirtier technologies to be replaced by cleaner and more efficient technologies. DOER also believes that biomass technologies should improve over time in response to the incentives created by the RPS, in addition to other regulatory and market forces responsible for continued technological progress in the electricity generation sector generally.

DOER has already reviewed the Wellons vertical, close-coupled gasification technology that Pine State plans to use for BP&L. That review was undertaken for consideration of a Statement of Qualification Application for Ware Cogen, a project in Ware, Massachusetts, that also had proposed to install Wellons technology and for which DOER granted a Statement of Qualification on June 21, 2004.<sup>6</sup> DOER came to the conclusion, in the case of Ware Cogen, that the Wellons technology met the criteria cited above, based on the reasoning set forth below.

The technology represents clear advances over conventional stoker combustion. The technology, through the configuration of air injection, separates the refractory-lined furnace into vertically arranged gasification, ignition, and combustion zones, above which is a water-walled, secondary combustion chamber. The vertical arrangement of the zones and the heavily insulated refractory

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<sup>3</sup> 9/17/04 letter.

<sup>4</sup> DOER's February 6, 2002 "Summary of Public Comments and Agency Responses" (see item 1.E on page six) and the DEP's January 8, 2002 letter, to which said item 1.E makes reference, can be accessed under the Public Comment Documents section near the top of this web page: <http://www.state.ma.us/doer/rps/delproc.htm>.

<sup>5</sup> Those Advisory Rulings can be accessed via a link at <http://www.mass.gov/doer/rps/advisory.htm>.

<sup>6</sup> See <http://www.mass.gov/doer/rps/approved.htm> for a list of all Units that have been granted Statements of Qualification.

walls (a) facilitate preheating of the air and internal radiation of heat to the grate, which contribute to fuel drying and devolatilization; and (b) increase particulate retention in the vessel, so that its oxidation is maximized. The configuration of air injection, consequent patterns of turbulence, and zoning result in maximized conversion of fuel to heat and minimized production of ash and particulates, as well as significant NO<sub>x</sub> emission reduction. This technology has advantages over fluidized bed technologies with regard to system efficiency, being less complicated and requiring less parasitic load (mainly from reduced need for fan horsepower), with the result that it produces more electricity per quantity of fuel heat input.<sup>7</sup>

Based on the prior review and its conclusion, DOER finds that the technology proposed for BP&L qualifies as "advanced power conversion technology."

### 5. Discussion of the Project's Air Emissions

A generation unit using an eligible biomass fuel and advanced technology must meet the criterion of "low emissions" in order to qualify a New Renewable Generation Unit for the RPS, per the regulations at 14.05(1)(a)6. This criterion does not set specific emission targets. Rather, the threshold for eligibility is expected to become more stringent as biomass energy conversion and emission control technologies improve. In addition, that threshold might differ among fuels, technologies, and project scale. Under the RPS regulations at 14.05(1)(a)6.a, a generator must receive a valid air permit from its appropriate state air quality regulatory agency to qualify as an eligible biomass generator. The same subsection also provides that the project "must . . . demonstrate to the satisfaction of the Division that its emission rates are consistent with emission rates for comparable biomass units as prescribed by the Massachusetts Department of Environmental Protection."<sup>8</sup>

As of the date of this Advisory Ruling, DOER defers any finding with regard to expected emissions at BP&L because the information received from Pine State is not yet complete or final, and discussions between Pine State and the MA DEP are continuing. DOER expects Pine State to continue those discussions with the DEP and to submit the results of additional engineering analysis and modeling. The DEP would review the additional information and also may discuss that information with the NH Department of Environmental Services (NH DES). Based on MA DEP conclusions as to whether its expected emission levels would be consistent with those of a comparable C&D-fueled plant sited in Massachusetts, DOER would decide whether the RPS "low emissions" criterion has been met.

DOER advises Pine State to maintain communication with both the MA DEP and the NH DES, as well as to monitor Advisory Rulings and Statements of Qualification at DOER's RPS web page.<sup>9</sup> Also, Pine State should note that DOER includes emissions limits and emission monitoring and reporting requirements as conditions in the Statement of Qualification for any non-Massachusetts biomass unit, including the proposed BP&L plant in New Hampshire.

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<sup>7</sup> The facts, assertions, and conclusions in this paragraph are based, in part, on a meeting with the owners of Ware Cogen, its consultant, and Wellons Inc. at DOER on April 13, 2004, including a slide presentation by Wellons.

<sup>8</sup> If the air quality regulations applicable in the jurisdiction where the unit is located do not require an air permit, then the unit must satisfy the requirements of the RPS regulations at 14.05(1)(a)6.c. This does not apply here.

<sup>9</sup> <http://www.mass.gov/doer/rps/>.

## 6. Summary of Ruling

DOER has found Pine State's proposed project, as currently described, to fall within the eligibility criteria for biomass-fueled New Renewable Generation Units provided in the RPS regulations at 14.05(1)(a)6 with regard to its technology and fuel; however, DOER defers any finding at this time with regard to expected air emissions. The following summarizes this finding, and it also notes several key issues and requirements for Pine State to consider in its project planning. DOER will also consider these issues and requirements when reviewing an eventual Statement of Qualification Application.

1. DOER finds the proposed fuels to meet the definition of Eligible Biomass Fuels in the RPS regulations. The proposed fuel stream will consist of C&D woody debris from waste processing operations, supplemented by wood pallets and by woody residues from forestry operations.
2. DOER finds that the proposed Wellons, vertical, close-coupled gasification technology would qualify as an advanced biomass power conversion technology. This finding is consistent with the conclusions on which DOER based its Statement of Qualification for Ware Cogen.
3. DOER defers any finding at this time with regard to expected emissions at BP&L because the information received from Pine State is not yet complete or final, and discussions between Pine State and the MA DEP are continuing. DOER expects Pine State to continue those discussions with the DEP and to provide information from additional engineering analyses and modeling. If the DEP determines that the plant's expected emission levels would be consistent with those of a comparable C&D-fueled plant sited in Massachusetts, then DOER would find that it meets the RPS low emission criterion. DOER advises Pine State to monitor DOER Advisory Rulings and other MA RPS decisions, as well as MA DEP air permits, subsequent to this Advisory Ruling.
4. Pine State should note that, while DOER may grant a Statement of Qualification for the proposed Generation Unit, the RPS qualification of the plant always would be contingent on Pine State's obtaining any required NH air permit and on its operating the plant in compliance both with those permit and with DOER's RPS regulations, including the conditions of the plant's Statement of Qualification. Emissions monitoring and reporting requirements would be included among those conditions.
5. Finally, Pine State should note that, once DOER grants a Statement of Qualification, further advances in "low-emission, biomass power conversion technologies" would have no effect on the plant's MA RPS qualification.